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AUTHOR	Walz, Garry R.; And Others
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ABSTRACT

This sixth chapter in "Elementary School Counseling in a Changing World" contains four journal articles which focus on technological advances. The articles help elementary school counselors explore their own feelings about technology and learn how technology may be used as a counseling tool. "Role of the Counselor with Computers" by Garry Walz notes that the computer has the potential to affect significantly the role of the counselor and examines changing counselor roles in light of recent computer innovations. "High Touch and High Technology: The Marriage That Must Succeed" by JoAnn Harris-Bowlsbey assists counselor educators, supervisors, and practicing counselors to determine conditions under which high technology alone, high touch alone, or the purposeful combination of the two may be the preferred mode of treatment. "Counselor Computer Competencies" by Don Dinkmeyer, Jr. and Jon Carlson suggests competencies the counselor needs to acquire and provides an introduction to computers and their uses. "Getting Comfortable with Computers" by Richard Nelson and Gerald Krockover lists the benefits of different computer uses for counselors. The chapter concludes with a set of issues for elementary school counselors to consider about a technological world. (NB)

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CHAPTER 6

A TECHNOLOGICAL WORLD

Technological advances have changed education, work, and leisure in our society. Although most people experience the benefits of these advances, most also know the anxiety and frustration that accompany rapid technological change as well as the alienation generated by impersonal aspects of technology. Elementary school counselors need to help children develop emotionally and socially in the context of rapid technological change. Counselors often need to deal first with their own concerns about technology before helping children understand the benefits and limitations of technology. This chapter helps elementary school counselors to explore their own feelings about technology and to learn how technology may be used as a counseling tool.

The chapter begins with an article by Garry Walz who observes:

> The computer is an invention of unparalleled significance. In the last decade several innovations have been heralded as having the power to change how we live. Probably none, however, has the potential of the computer to affect our lives in general and education in particular.

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The chapter includes articles which examine the need for elementary school counselors to acquire competencies with computers, to overcome anxieties about using the technology, and to integrate computer technology into counseling programs. These articles raise theoretical issues, practical issues, and ethical issues about the counselor's use of computers.

Although Chapter 6 is mainly limited to issues related to computer technology, several of the articles suggest that technology includes a wide range of useful tools for counselors especially in the area of video recording. The elementary school counseling literature in the next decade needs to explore imaginative uses of video technology to improve elementary school counseling

The central issue of this chapter is not whether technology is here to stay or if technology will affect the services elementary school counselors provide. Instead the issue is whether counselors will take charge of technology to improve their services and to make schools more humanistic institutions. The articles included in Chapter 6 argue that technology can make education and counseling more human.

As Nelson and Krockover note in the concluding article of this chapter, computers have the humanizing advantage of being blind to "sex, race, ethnic group, and socioeconomic status, showing virtually limitless patience to individuals from any group who happen to take longer than others to develop particular skills."

Role of the Counselor with Computers

Garry R. Walz

The computer has the potential to affect significantly the role of the counselor. Changing counselor roles are examined in light of recent computer innovations.

The computer is an invention of unparalleled significance. In the last decade several innovations have been heralded as having the power to change how we live. Probably none, however, has the potential of the computer to affect our lives in general and education in particular.

Certainly part of the reason for the tremendous impact of the computer on education is the time of its arrival. Education is currently under attack from dissatisfied constituencies who are demanding that students acquire a great deal more from their schooling. Postsecondary education, after a decade of emphasis on equity, is now being called upon to place greater emphasis on excellence and achievement. New strategies for educating both adolescents and adults are extending learning beyond school and college walls to a variety of self-managed educational experiences. These cries for greater excellence in education and improved student performance are occurring at a time when the costs of education are rising rapidly. The demand and the need for a quantum leap in improving education is so great that if the computer did not exist, something akin to it in potential, power, and impact would have been invented.

The computer is having a strong influence on school districts across the country, on state educational plans, and on policy pronouncements for both public and postsecondary education. The clamor for the computerization of education is becoming a din. Yet even before computers have become established in the educational enterprise, some people are decrying both their potential and the way they are being used. Are computers merely "electronic page-turners," or do they have the capacity to affect significantly how students and adults learn? Will school systems, training institutions, and organizations be able to use them to change and enhance the learning process? These questions are paramount. The difficulty in answering them is compounded by the fact that the real development and contribution of computers is only now emerging. The "computational powers equivalent to that of present-day super computers . . . will be available in a micro-process system for under $100 by 1990" (*Computers in Education*, 1983). Clearly, any discussion about the role of the counselor with computers needs to focus not

on present activities or past experience but on possible and probable developments for computers and their impact and influence on counseling and human services in the near future.

Characteristics of Computers and Technology

There is an understandable tendency today to deal in simplistic generalizations about the computer's super powers and how it will revolutionize all that it touches, with little discussion of the concepts basic to the constructive use of computers. A discussion of computers that focuses on hardware alone overlooks the fundamental power of the computer. This is especially true in counseling, where the applications of the computer are still miniscule compared with the needs and opportunities.

Four characteristics of computers and technology will have significant effect on their adoption and use. First discussed by Walz (1970) in a *Personnel and Guidance Journal* special issue on technology and guidance, these characteristics have proven to be important in considering possible roles for computers in counseling and human services: (a) generation of both positive and negative outcomes; (b) increased visibility of conflict between choices and values; (c) the duality of depersonalization and individualization; and (d) influence of the social setting.

Generation of Both Positive and Negative Outcomes

Computers will create new opportunities to counsel differently and better and to perform counseling functions that have not been feasible in the past. But while the computer makes possible the achievement of new goals, some loss in the achievement of older goals may occur (e.g., greater opportunity to examine pertinent information may result in less one-to-one counselor interaction). The same technology and process will bring about both the gain and the loss.

Thus, the positive attributes of using computers must be weighed against the negative. In this process it is likely that different people will apply different criteria as to what is desirable or undesirable. Counselors with a strong interpersonal relationship orientation may have a different view than those with a guidance curriculum or a learning orientation. The fact is that even a very sophisticated technological innovation such as the computer has negative aspects. This explains why computers engender so much fear and resistance on the part of some counselors and in some educational settings.

Increased Visibility of Conflicts Between Choices and Values

Using computers in counseling forces program developers to delineate clearly their values and goals. In this process people may recognize greater conflicts than were apparent when goals or means were not sharply defined. In traditional counseling settings individual counselors have operated independently, and conflicts, if they existed, could be ignored or allowed to exist without much attention or fuss. The introduction of computers into a counseling program dramatizes the need to make hard decisions about values and outcomes. Although some may bemoan the conflict associated with computers and technologies and long for the days when counselors could "do their own thing" without the necessity for such choices, the very discussion necessary for the appropriate use of computers can sharpen the programmatic focus to a degree that strengthens the entire guidance program.

The Duality of Depersonalization and Individualization

In the year of Orwell's *1984* we are all sensitized to technology's potential to become the master rather than the servant. The very thought of such mechanistic processes entering the highest realm of humanistic interactions (i.e., counseling and education) convinces many that the survival of the individual as an existential being is possible only by opposing the adoption and use of computers.

The fact that 1984 is upon us and that few of the doomsday outcomes horrifyingly described by Orwell have occurred speaks to the ability of human beings to mediate and control the use of technology to serve their best interests. Furthermore, there is increasing evidence that in our complex world only technology can preserve and make possible the freedom and rights of humankind that we cherish so dearly. The storage and memory capacity of the computer provides the means to respond to people as individuals. When large numbers are involved, only the grossest identification and response is possible by any means other than the computer. Many who have experienced computer-assisted counseling feel that it was an extremely "personal" experience because the interaction with the computer was so focused on them.

The Influence of the Social Setting

The social setting for the computer has a strong influence on whether or not, to what extent, and in what ways the benefits of the computer will be realized. It is undesirable, even dangerous, to either discuss the usefulness of a computer without reference to the setting in which it is to be used or generalize about the usefulness of computers from one setting to another. An adult counseling center

committed to providing accurate information about career opportunities and choices is likely to use a computer very differently than a secondary school guidance program concerned with helping adolescents deal with important life plans and decisions. The computer, as a component in a highly variable social setting, is ungeneralizable because it both shapes and is shaped by the particular program in which it is used, the school or agency where it is located, or the larger community. However primitive our knowledge about computer-assisted counseling, our knowledge about how to adopt and implement computer-assisted counseling in different counseling and human services programs is even more primitive. Generalizations across different levels and settings are of little real value.

New and Emerging Counselor Roles in Using Computers

Systematic Exploration and Use of Computers

No role for counselors in using computers is easily generalizable or clear-cut. The level, the setting, and the particular program culture will determine how the computer can be used most effectively and what outcomes will accrue. Therefore, an essential first step for counselors in defining their role will be practical experience with a variety of strategies and procedures. There is no substitute for counselor familiarity and comfort with computers. The difficulties of acquiring such experience probably have been greatly overstated. Short courses offered by computer vendors or a variety of educational institutions can provide a relatively quick, basic understanding and skill level.

Counselors can begin immediately to explore possible computer applications and use in two areas. The first, computer-managed counseling (CMC), assists counselors with the clerical and administrative tasks associated with their work, tasks that frequently inhibit their ability to undertake meaningful counselor interactions (Bleuer & Walz, 1983). Practical applications of computer-managed counseling include the following: client-student recordkeeping, counseling activity logs, student and client attendance records for both individuals and groups, scheduling of individuals and groups, records of grades for easy production of transcripts, resource files for the counselor's personal use, and general word processing (e.g., report writing and personalized letters). In these areas the computer can alleviate some of the tedium and monotony of present counseling duties and allow time for more meaningful counselor-client interactions. Many existing software programs enable counselors to perform all of these tasks without great skill or expense.

A second area of exploration for counselors is computer-assisted counseling (CAC), which is to counseling what computer-assisted instruction (CAI) is to

teaching. This is an interactive counseling technique in which the computer is used to present information, elicit and monitor responses, and select and present additional information in accordance with individual client needs (Bleuer & Walz, 1983). CAC offers three significant contributions to the counseling process: objectivity, availability, and the capacity to store and retrieve a great deal of information. Objectivity is an important aspect of any educational decision and planning relationship, and the computer is certainly objective. Availability, or the opportunity for ready access to information, is also a decided contribution of CAC. After initial instruction, clients can often use the computer with sufficient reward that additional direct interaction with a counselor is unnecessary; in other cases, clients are better prepared to have meaningful discussions with the counselor about their decisions and plans. Perhaps the greatest contribution of present-day CAC is the computer's capacity to store and retrieve many kinds of information. This ability is evident in computer software that provides career and educational information, skill-building in such areas as problem solving and decision making, interest and ability assessment through computerized testing modules, and test practice and preparation such as for the SAT.

Exploring and trying out CMC and CAC will help counselors discover ways to reduce the time they devote to repetitive, monotonous tasks that the computer can perform better. Providing clients with some of the same meaningful experiences and learnings by computer that are possible in one-to-one counseling may also lead to improved quality for one-to-one counseling interactions.

An Active Stance for Quality Assurance

Many are inclined to judge the quality of a computer program by the complexity and the quantity of the hardware. Simply stated, some people believe that the more computers are used, the more advanced and sophisticated the program. In fact, program effectiveness is more a function of quality and appropriateness of the software than of expense or quantity of computers. The available software for counseling and guidance can be used on relatively few computers. Therefore, the first consideration in selecting a computer is to make sure that it is compatible with software that meets the needs and interests of a particular clientele. It is just as important to make sure that the chosen software is of high quality. A vital counselor role, then, is a quality assurance review of all software to be used. This is particularly important for two reasons. First, unlike print media, software programs cannot be reviewed quickly or casually. The assumptions and values inherent in the construction of each program are not readily apparent and require careful analysis. Second, unlike many guidance procedures, computer software frequently will be used by students or adults without further reference to the counselor. Such independent access makes the need for careful scrutiny all the more important. This is a responsibility that counselors

cannot delegate and must carry out if computers are going to make a truly viable contribution to counseling.

Evaluation of the Use of Computers

The effects of computers in counseling processes are only beginning to be known. Although there is an emerging consensus among researchers about the positive benefits of computer-assisted counseling, the actual contribution of computers to counseling must be determined separately in each program.

Perhaps the greatest deterrent to systematic and ongoing evaluation of counseling and human services innovations has been uncertainty about how to do it. Consequently, many initially attractive innovations have been abandoned because their value could not be sufficiently substantiated to justify the added effort or expense. Computers, however, can compile the data needed to evaluate the quality of their services.

Counselors must be committed to gathering specific data about what computers do or do not do to achieve significant outcomes. One approach, *SHAPE—Self Help Approach to Program Evaluation* (Collet, Walz, & Collet, 1983), presents a readily usable method for program self-evaluation and suggests a variety of sources for judging the value of using computers in counseling processes. This program provides a systematic approach to evaluation that does not require external consultants or complex statistical procedures. The inevitable pendulum swing will bring about questioning of the use and worth of technology in education and counseling. If counselors fail to evaluate their programs, it is likely that others will do it for them, and most likely from a nonobjective and possibly hostile perspective.

Computers as an Indiscriminate Discriminator: A Commitment to Equity

Client response to computers is varied and not universally positive. Based on previous experiences, clients may approach computers with either trepidation or pleasure. Women and minority group members may show less interest or desire to use computers than do White males. Clients with linear cognitive styles may find the computer less appealing than do those with inferential thinking and learning styles. Previous experience with computer games can also influence people's response to computers.

Special efforts to minimize anxieties and to clarify false assumptions about computers could be necessary if many clients are to benefit from using them. Most users do enjoy the computerized components of a counseling experience, finding reinforcement and reward. It is a major responsibility of counselors to

attend to initial attitudinal and experiential differences and to ensure that they do not keep certain individuals or groups from profiting from the counseling process.

A Systematic Adoption and Implementation Process

Ask a group of counselors how they first introduced computers into their program and you will receive as many descriptions as there are counselors. Patterns range from imposition from higher administrative authority to a strong counselor initiative to broaden the resources available within the guidance program. Evident in many of the adoption procedures used, however, is the lack of an orderly and systematic process. More often than not, decisions about installation and implementation are based on availability of funds or administrators' desires to computerize the program. The resultant patchwork quilt of usage is not conducive to realizing the full potential of computers in counseling.

A seven-step model for developing and implementing a high-tech counseling program has been described by Bleuer and Walz (1983). This model emphasizes the need for customizing the computer to the particular goals and needs of a given human services program and provides a step-by-step process for counselors to follow. The steps in the model are: (a) analyze the program for potential computer applications; (b) investigate available computer resources; (c) select computer uses that will meet program needs; (d) match software to program needs; (e) match hardware to software; (f) invest in personware; and (g) implement and evaluate. Basic to this model is purposeful and planful adoption rather than an impulsive, thoughtless approach that rushes to the end state (the purchase and installation of computers) before the necessary groundwork has taken place.

The counselor should encourage excited interest in the adoption process, but should also make sure that the necessary thinking and planning occur before decisions are made or actions are taken that might later hinder or negatively affect the program. The computer has the potential for providing great individuation and flexibility within the counseling program. Unwise decisions, however, may lock the counseling staff into either behaviors or resources that actually negate their ability to respond flexibly and that could result in a more rigid program than if they had not attempted to use computers and technology at all. This is a time when counselors must stand firm and insist on careful planning and judicious implementation.

Exploration into New Uses of the Computer

Computers can help counselors accomplish old tasks in new ways or undertake new functions not previously thought of because the necessary methodology

was lacking. Unfortunately, the tendency exists to try to mold this new innovation, the computer, to existing modes of thinking and behaving. Thus, in some cases computers are used primarily as efficient storage banks that offer an advantage over traditional methods of filing and retrieving information. Admittedly, this is a useful role. But counselors need to explore exciting new uses for computers in counseling.

Listed below are a few of the avenues by which counselors may use computers to enhance the scope of counseling and the quality of counseling outcomes (*Computers in Education*, 1983):

Tutoring. The computer can be an excellent tutor in different aspects of career and life decision making and problem solving. It is patient and can readily adapt to a variety of individual differences and needs.

Diagnosis. Computers can help to diagnose individual students' knowledge and cognitive style. Counselors can use this information to plan more appropriate learning strategies that build on the strengths and weaknesses of a given student.

Game technologies. Computer games can provide motivation and interest for extensive practice in the problem-solving abilities associated with making major life plans and decisions. They also can serve a diagnostic function, helping to determine where individuals need additional help and practice in planning and decision making. It is possible to develop games that resemble exploratory learning environments, enabling the user to simulate deciding and behaving in actual life situations.

Networks. Through the use of telecommunications or special computer programs, it is possible to create communities or networks of participants regardless of physical location. Students interested in exploring a particular career, for example, could develop a support network using computer telecommunications. They could then interact with students in other classes or in other schools without any need for physical meetings or travel. Resources developed during the day could be shared with parents in the evening, providing an opportunity for parent-child interactions currently missing in many families.

The above are just a few of the many possibilities for using computers in counseling. Counselors must provide a creative impetus for the use of computers. They must be unwilling to accept their being able to perform old tasks better as the major or sole contribution that computers can make to counseling.

Counselor Role Priorities

The computer has the potential to affect significantly the role of the counselor. But it is only a potential. The addition of computers to a human services

program does not guarantee that the program will be either more efficient or more effective. Rather, it is the clear identification of outcomes and the means selected for reaching those outcomes that will determine whether or not a computer will enhance the counselor role. Several considerations are paramount in redefining the counselor's role vis-à-vis the computer.

1. In light of the enormous potential of the computer, we must look to the creative redesign of counseling. There is a real danger that we will automate the status quo—settling for doing what we do with a little more pizzazz and in a labor-saving mode, but with little significant change in how we define our role or interact with clients. Physical scientists have used computer programs as a way of testing the soundness of their theories. We need to use computers to assess the soundness of our counseling strategies and to determine how we may better achieve our goals, using the computer.

2. We must define our developmental efforts as a joint enterprise. Perhaps one of the most exciting aspects of using the computer in counseling is the opportunity it provides for individuals to work together as a team—clients, counselors, parents, and community members—to design programs that best meet individual and joint needs. In most of the areas in which counselors work, significant others play a vital role in the movement from idea to action. Making those significant others an integral part of the learning environment is fascinating and potentially beneficial. Joint planning concerning the ways computers can be used to reach a variety of counseling objectives is likely to whet the interest of these various groups regarding computer use and help to ensure that objectives are met.

3. Many aspects of the use of computers in counseling create uncertainty. Is there a synergism that will encourage students to become involved in other learning experiences, computer or otherwise? Will the increased use of computers by students disturb parents? Will extensive use of computers enhance the counselor role and encourage new, higher-level personal interactions, or will counselors become mere functionaries in an automated system? What effects will computers have on the motivation of students and adults? Will they be encouraged to seek other learning experiences and more computer interaction, or will they be less inclined to seek out new learning challenges? We need to address questions such as these as we consider broad-term effects of computers on clients. Vital to the new counselor role is a willingness to observe, identify, and assess behaviors associated with computers, on the part of both those who use them and those who provide them. This must become an important subject of discussion and analysis as we move toward a computer-enhanced counselor role.

4. Emerging research in cognitive science tells us that dialogue is a particularly meaningful way for students to learn, especially when it is followed

by regular practice. This suggests a learning model not unlike typical counseling interactions and may mean that subject-oriented educational programs will be moving closer to the style of the counselor. This is an exciting opportunity for counselors to influence educational processes, leading toward discovery learning and individual planning and decision making. The computer may be the instrument for breaking down the massive walls of isolation erected by counselors over the years, prohibiting or limiting their interaction with other educators and the community. The computer can be the means for achieving coalescence. Counselors may be in a position to expand their influence in areas far wider than the traditional counseling realm.

Counseling today is still relatively untouched by technology. Although tape and video recorders and programmed instruction are a regular part of most counselor preparation programs, they are hardly ever used in day-to-day counseling. The computer, however, offers a new vision for counselors—the opportunity not only to do better what they now do but to redefine what counseling is and how it is delivered. The ultimate effectiveness of tomorrow's counselors will depend somewhat on advances in the development of hardware and relevant software, but most of all on personware—the attitudes and feelings of counselors about the adoption of a powerful new tool. It will require their giving up some of what they have done well in order to take on new means and goals. The most important new role for counselors in the use of computers may well be a sense of creative risk-taking that encourages, stimulates, and models for clients a change in viewpoint regarding the counseling experience and how to use it.

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High Touch and High Technology: The Marriage that Must Succeed

JoAnn Harris-Bowlsbey

Counselors should view the computer and its associated technology as partners in helping students and clients achieve their counseling goals. The extent to which this collaborative effort is feasible or considered desirable, however, is related to the theoretical perspective the counselor adopts. Affective theoretical positions, in which high touch is seen as a powerful remediating force, will view the computer as a much less welcome partner than will cognitive theoretical perspectives, in which systematic processes and learning goals can be defined. For the future survival of the profession, it is essential that the appropriate merger of high touch and high technology be accomplished and that counselors be trained to implement the synthesis.

The computer, introduced into the counseling field in the 1960s, is just now reaching a period of high adoption, owing to the advent of microcomputer technology, the existence of several well-tested products from which to select, and the extensive marketing effort of both commercial and not-for-profit organizations in the field. It is particularly relevant, then, that in the 80s the counseling and guidance profession come to grips with an appropriate merger of high technology and high touch to assist clients/students in accomplishing the goals and objectives defined for the counseling or guidance relationship.

Before embarking on such a significant task, it is appropriate to define the terms *high technology* and *high touch* (Naisbitt, 1982). High technology is defined as any mode of delivery of counseling or guidance services in which a computer or an interactive videodisk is central to the accomplishment of client/student objectives. High touch is defined as any mode of delivery of counseling or guidance services in which human, empathic interpersonal skills are central to the accomplishment of client/student objectives.

The purpose of this article is to assist counselor educators, supervisors, and practicing counselors to determine conditions under which high technology alone, high touch alone, or the purposeful combination of the two may be the preferred mode of treatment. To begin this process, at least three assumptions seem apparent. First, high technology will never replace high touch in the human resource development field. Although robots may make automobiles better and faster, my assumption is that human beings will never be better counseled or guided by robots, computers, or interactive videodisks. A second

assumption is that high technology and high touch should be viewed not as opponents, but as potential partners. This article will suggest under what conditions and in what ways they may become powerful partners. Third, presumably the profession's thinking about the merger of high technology and high touch is new and tentative; therefore the counselors whom we educate and supervise will need preservice and in-service training to think in ways suggested in this article.

Counseling and guidance practice need to flow from a theoretical base, and each of the major schools of counseling theory has its attendant tools, techniques, and modes of service delivery designed to facilitate the client's accomplishment of goals deemed worthy and appropriate. My contention is that the degree of involvement of high technology in assisting individuals to reach those goals is, or should be, related to the theoretical perspective the counselor or helper adopts.

The following pages elaborate on this statement in detail. Each major theoretical perspective will be examined in regard to its hypotheses about the self, the environment, and the interaction of the two.

Theoretical Perspectives of Counseling: Affective Approaches

Rogers

The work of Carl Rogers (1951, 1961) has made a major impact on counseling theory and practice. Like other theorists, Rogers deals with the self, the environment, and the interaction of the two. The self is a learned attribute consisting of individuals' pictures of themselves. The aware organism is constantly experiencing in a perceptual field. The part of the field that the individual accepts or experiences as separate from the remainder becomes the *self*. The individual by nature strives toward integration and actualization of potential. For this reason, the self of the healthy individual becomes increasingly differentiated over time into an organized, fluid, consistent conceptual pattern of perceptions together with values attached to these concepts. Ideally, as the individual actualizes, the concept of self becomes increasingly harmonious and increasingly consistent with experience. Growth consists of the continuing acceptance and integration of experience as a part of the self-structure.

The environment, says Rogers, is that part of the perceptual field other than the self. In other words, *reality* for a given individual consists totally of that individual's unique perceptual field. The part of the field that is claimed as self is excluded from the environment, although the two are in continuing, dynamic relationship to each other.

The interaction between self and environment has at least two important aspects. First, the environment is the source of the individual's need fulfillment; the growing individual reaches out into the environment to find those things that are needed for self-actualization. Second, the environment is the place in which experience occurs. Optimally, experience is integrated into the self so that the two are coterminous or nearly so. Experience, therefore, may at times be a part of the environment (that is, not yet integrated into the self), and at other times be a part of the self (that is, accepted and integrated into the self-picture).

The primary goal of counseling is to create an environment in which an individual can release the natural tendency to self-actualize. Such a growth environment must allow the client to examine experience without judgment, to accept it, to integrate it into the self, and to reach out into the environment to seek ever new experience to fulfill needs and enhance the differentiation of the self. The counselor's role is to create this environment. Its characteristics are warmth, understanding, acceptance, supportiveness, empathy, and encouragement. The primary technique is skillful reflection, which enables and encourages the client to look at experience, environment, and self with increasing perception and awareness.

The hallmark of the Rogerian theory and approach is high touch. In fact, high touch is the absolutely necessary condition for any forward movement in understanding and developing the self, the environment, and the interaction of the two. The Rogerian approach is a very personal, subjective one. The world of educational and vocational options doesn't even exist unless it becomes a part of the individual's live perceptual field, and until it does, it would be impossible to deal with. The growing individual will reach for such options only when a need is felt for them, and when the self is ready to integrate them into experience and awareness.

High technology is anathema in this theoretical perspective. The human counselor, and well-sharpened perceptive and reflective skills are absolutely critical to reaching valid counseling goals. The only imaginable place for a computer in this framework is as a method of explaining selected parts of the environment (e.g., occupations or colleges) when an individual feels a need to reach out of self to access unknown elements of the environment. Even in such an event, the counselor would be a critical entity in assisting the individual to integrate the new-found information from the environment as a part of the self and the self-experience.

Gestalt

Akin to Rogers's approach, in that emphasis is placed on the affective, is Perls's Gestalt therapy. The Gestalt view emphasizes the position that human beings

are more than the sum of their parts and that individuals must be perceived and must behave as wholes. Since humans are viewed as wholes, the organism cannot be separate from the environment. The self is contained within an *ego boundary*, the recognized division between the individual and the environment. Humans are constantly plagued with a Freudian-type controversy between *topdog* and *underdog*, Perls's terms for the Freudian *superego* and *id*.

The environment is a place from which to select activities, experiences, and people to fulfill needs. The aware individual senses needs and seeks a means whereby to meet them. This awareness catalyzes the absorption of elements from the environment into the individual in order to make the organism more nearly whole and more stable as a psychological system. The interaction between the individual and the environment, then, is a dynamic, fluid one. The ideal is a kind of homeostasis in which the individual's needs are amply met and the individual has "owned" all of the experiences and attitudes that are a part of a very aware "now."

As in the Rogerian approach, the mode of counseling is a direct one-to-one human intervention approach. Techniques include dream analysis, role playing, and active confrontation. Counseling goals are the raising of awareness, the acceptance of responsibility for one's own behavior, and independence.

Also as in the Rogerian approach, this theoretical perspective does not lend itself to the application of high technology. This one is a high touch, totally human delivery mode, applied one-to-one and in groups. Emphasis is given to development and maturation of the self, with the assumption that life's decisions and choices can be adequately handled once such responsible maturity is achieved.

Two predominant theories that emphasize the affective approach to counseling have been reviewed. From these perspectives the spotlight is on the individual and the development of the self. All of life's choices are viewed as extensions of the self into the environment. It is assumed that the individual will be aware only of those choices that are a part of the perceived phenomenological field. Furthermore, it is assumed that wise choices will be made from among the known alternatives if the individual has sufficient integration and awareness. In short, attention needs to be given only to the self in order to ensure successful interaction with the environment.

Theoretical Perspectives of Counseling: Cognitive Approaches

Trait and Factor

The trait-and-factor approach has its roots in the work and theory of Williamson (1939, 1972). In this approach humans are viewed as rational beings composed

of a variety of measurable personality factors. If individuals adequately understand their capabilities, including both strengths and limitations, they can use these capabilities in a planned way to lead purposeful lives and to maximize the potential they have. It is assumed that with adequate cognitive understanding of self, the individual will be able and motivated to take purposeful action.

The environment is viewed as a place in which jobs and educational opportunities have differing requirements. Given the individuals' potential to have clear self-pictures of their capacities and for the requirements of jobs and educational programs to be measured, it is possible to match the one with the other. To the extent that accurate matches can be made, both the individual and the environment can function productively and harmoniously.

To implement this counseling theory, it is necessary to have accurate assessment tools to measure the characteristics of both the individual and the environment. Obviously, in order to create meaningful matches between the two, it is necessary to measure the same aspects of both in the same terms so that linkages can be made.

Given the availability of assessment tools, then, the role of the counselor consists of several aspects. First, the counselor needs to use the assessment tools to accurately analyze the individual to gain and to transmit an accurate understanding of self-variables to the client/student. Second, the counselor must synthesize data about the client in order to understand the client's strengths and weaknesses. Diagnosis of problem areas or strengths that need cultivation follows. Prognosis provides predictive data about probabilities of success in alternative occupational or educational pursuits. Counseling is a period of making plans and taking action steps to bring about adjustment or the next steps of action. This period might typically be followed by a more formal one of follow-up evaluation.

The trait-and-factor approach lends itself beautifully to high technology and can minimize high touch, which has never been a significant variable in the mix. There are several reasons why this approach lends itself to high technology. First, it is a cognitive, logical step-by-step sequence with clearly identifiable branches and outcomes. These characteristics make it totally amenable to flow-charting, systemization, and therefore to computerization. Second, the assessment instruments inherent in the approach can be administered, scored, interpreted, and compared to a variety of norm groups by computer with more precision, more objectivity, and faster feedback than by humans. Third, it is a relatively short-term definable process, although it may need to be repeated at intervals, and therefore may be presented by computer and associated devices in a finite number of cost-feasible sessions. Finally, the variety of possible alternative interpretations, questions, and relationships can be identified so that the resulting computer program can allow an amazing degree of personalization through multiple branching opportunities.

Rational-Emotive

The rational-emotive point of view focuses on the individual's belief system. Albert Ellis (1967), the theorist behind this position, has defined 11 irrational ideas, one or more of which every human being believes. To believe an irrational idea, such as "Every adult human being should be loved or approved by virtually every significant other person in his community," will cause negative emotions. There is a direct relationship between belief and emotion. Changing the belief set will change the emotional set. The important focus, therefore, is to identify which of the 11 irrational ideas a client accepts and to actively and persuasively convince the client that these beliefs are in error. Once a belief, that is, a self-statement, can be corrected, the emotions associated with it can be changed. The self, therefore, is a complex structure of beliefs learned from parents and the larger society. The environment is the stage on which these beliefs are set. The interaction between the two and the quality of the emotional response of the client/student can be substantially altered by the modification of beliefs.

The counselor in this model is a very forceful teacher. Once the number and magnitude of the irrational beliefs are assessed, the counselor sets out to attack the client's beliefs forcefully and directly in an attempt to correct them. Little or no attention is given to feeling states; it is assumed that they will correct themselves as beliefs are changed and tested in the environment.

Although this position has always cast the human counselor in the role of an intervention agent, the approach is not high touch. Little value is awarded to warmth, genuineness, rapport, or any of the other counselor characteristics so valued by other approaches. The counselor needs to be an attacker, a nagger, an arguer, and a confronter. Computers can do that! Although it has not been done to my knowledge, it would seem possible to create an on-line, detailed, branching analysis of the degree of a client's commitment to each of the 11 irrational ideas. The material could be laid out in much the same way adaptive testing items are. If the client responds in a way that indicates that a given irrational idea does not exist for him or her, the computer soon abandons it and goes on to the next idea. Alternatively, if some responses indicate a degree of adoption of a given irrational idea, this idea might be pursued in great depth and ferreted out so that it could be forcefully attacked. The "attack" might be enhanced with the audiovisual power of a videodisk as well. This kind of program could comprehensively assess the degree of belief each client holds in each of the irrational ideas. Strong prescriptive treatment could be supplied for each of several levels of belief in each idea.

Behavioral Counseling

Behavioral counseling explains behavior in relation to the stimulus-response learning theory (S-O-R). Desired behavior can be learned, and learning takes place through positive reinforcement for acceptable behavior or approximations of it. Undesirable behavior can be unlearned through negative reinforcement or lack of reinforcement, thus extinguishing the behavior. The self, then, is a set of learned behaviors and responses; the more appropriate and the broader the repertoire of these behaviors, the more developed or refined is the self. The environment is a very important focal point of this counseling persuasion because it is the source of the learning. The environment can either perpetuate or extinguish desired or undesired behaviors. Its value may even be more important than that of the self. Surely reality, learning, and adjustment reflect the quality of the interaction between the environment and the individual.

In this theoretical perspective, the counselor serves two primary roles: manipulating the environment to set up necessary learning conditions to achieve desired ends, and assisting the individual to understand the interaction that is taking place. Of these two roles, the first is by far the most important. The tools of this approach, then, are those involved in setting up learning conditions to teach desired behaviors. The counselor must be a creative engineer of experience for the client and must become expert at modifying the person-environment interaction when there is a variation from the desired end goals worked out in consultation with the client.

As we have noted with other cognitive approaches, behavioral counseling is a defined system. It therefore lends itself to a fair degree of computerization. The computer could be used to generate prescriptions for clients by simulation methods like those used for computer diagnosis of patients or trips into space. Given that the computer program had a "knowledge" of reinforcement theory, client goals and specific behavioral problems could be entered into the computer, and the computer could provide the counselor and the client suggested plans for environment change or manipulation. If a first try at this approach did not completely achieve the desired end goals, the computer could prescribe "corrections" to the original plan based upon input of data about the success of the plan.

Besides being used as a drafter of plans for the counselor, the computer could also serve as a direct teacher for the client. It could provide direct didactic material about learning. It could ask the client to enter specific problems and desired end goals, and it could set up computer and videodisk-provided positive and negative reinforcers in simulated situations.

Application of Theories to Career Counseling

Any one of the counseling theories reviewed could be used to assist a client/student in making educational or vocational decisions, often called career counseling or guidance. Historically, the trait-and-factor approach has been heavily applied to decisions in the career arena. Even counselors who typically use the approaches described earlier in "personal" counseling often make a transition to an eclectic, trait-and-factor, or Parsonian approach when helping a client make educational and vocational choices. The Parsonian approach (Parsons, 1909) is a logical three-step one: (a) clients should become aware of their interests and abilities as these relate to work; (b) clients should become aware of the many alternatives available in the environment, that is, available occupations, paths of education, and schools; and (c) clients should be helped to put these two domains of information together to identify feasible personal options. Counselors have used the work of John Holland (1973) so well and so enthusiastically because it "measures" the person and the environment in the same three-letter terms, thus making the relationship between the two easy to understand. The computer has already been used extremely effectively to help implement the trait-and-factor and Parsonian models.

The Presenting Problem

Extensive review has been provided of the most common theories of counseling. Some inferences have been drawn in regard to the degree of fit between these theories and the use of the computer as a tool. Another dimension that needs to be considered in the mix is the nature of the presenting problem that the client/student brings to the counseling situation. Considerable research data (Garis, 1982) indicate that the computer is a very effective tool when career choice is the primary if not exclusive presenting problem. In the Garis study, findings indicate that with this population the best treatment is a combination of counselor and computer; the second best, the computer alone; and the third best, the counselor alone. All three of these experimental groups made significant gains in aspects of vocational maturity and specification of career plans over the control group, which had no treatment. The body of research on the effects of one-to-one and group counseling with personal-social presenting problems would lead us to believe that the priority order of effective treatments would be quite different and would place the counselor in first place as the most effective mode of treatment.

Summary

There seem to be two relevant dimensions on which to assess the potential effectiveness of the computer as a tool in counseling and guidance. The first is the theoretical base of the counseling approach. The greater the extent of the cognitive emphasis of the approach, the greater the potential for effective computer intervention. More specifically, the computer lends itself well to approaches that have the following characteristics:

1. The counseling process can be described as a systematic step-by-step process;
2. The interpersonal skills of the counselor are not the primary ingredient of the counseling process; and
3. The improvement of the client/student depends on the acquisition of skills, knowledge, or information.

The second dimension is the nature of the presenting problem. The greater the confinement of the presenting problem as a career choice problem, one that is related specifically to educational and vocational choice, the greater the potential for the computer alone or in combination with the counselor to be an effective mode of intervention. The expectation would be, therefore, for the computer's effectiveness to be significant in the following priority order:

1. With "pure" career guidance concerns, with counselor support, combined with a cognitively based theoretical perspective;
2. With pure career guidance concerns, without counselor support, combined with a cognitively based theoretical perspective;
3. With counseling concerns other than career guidance, with counselor support, with a cognitively based theoretical perspective;
4. With counseling concerns other than career guidance, without counselor support, with a cognitively based theoretical perspective;
5. With counseling concerns related to career guidance, with counselor support, with an affectively based theoretical perspective;
6. With counseling concerns related to career guidance, without counselor support, with an affectively based theoretical perspective;
7. With counseling concerns unrelated to career guidance, with counselor support, with an affectively based theoretical perspective;
8. With counseling concerns unrelated to career guidance, without counselor support, with an affectively based theoretical perspective.

This priority order is currently based on judgment, rationality, and a limited amount of research data. This is a fertile area for extensive future research.

Implications for the Education and Supervision of Counselors

This article began with the premise that the merger of high touch and high technology must be a marriage that succeeds. Few, if any, marriages succeed without planning, hard work, and learning. The same will be true of the high touch/high technology marriage. If it does not succeed, counselors must have preservice and in-service training specifically designed to provide the following:

1. A general base of computer literacy, especially in regard to microcomputer technology;
2. Good cognitive knowledge of the various theoretical perspectives for both career and personal-social counseling and of their preferred techniques;
3. Understanding of the strengths and weaknesses of computer delivery of services;
4. Understanding the systematic approaches of the delivery of guidance, especially of career guidance, and of the role of the computer in these approaches;
5. An understanding of the combinations of modes that can be used for delivery of services and under what conditions single and combination modes of delivery are most effective.

To address these concerns, counselor education programs need to modify and add to curriculum. They need to provide counselors with already-existing knowledge about and experience with computer software as well as with skills to develop the systems of the future. Counselor supervisors need to give attention to the in-service training of their staffs and to the acquisition of computer-based systems to provide significant assistance in the areas of counseling and guidance, in which the computer's effectiveness has already been proven. The technology of the computer is with us to stay, and that of the interactive videodisk is on its way. If we cannot integrate these technologies into our work effectively, we will find ourselves as out of date as did the cloistered scribe after the introduction of the Gutenberg printing press. If we can integrate these technologies, the result of the new union will be greatly improved and expanded services to our clients.

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Counselor Computer Competencies

Don Dinkmeyer, Jr.
Jon Carlson

The first automobiles were often viewed as dangerous, noisy machines. Villages forced drivers to send men with red flags ahead of the automobiles, warning pedestrians and horses of the oncoming vehicles.

Men with red flags are not being sent ahead of the computers entering our schools. Microcomputers, however, are replacing many traditional methods in education. Counselors who understand the purpose and potential of computers will be able to use the machines to increase their effectiveness; thus they need to acquire a specific set of computer competencies.

A quarter million microcomputers (small, portable computers that are sometimes called "personal computers" because of their use in homes and schools) will be in our schools this fall. Computer manufacturers want to donate machines to each of the 83,000 schools in the nation. Revenues for computer-assisted instruction reached $2 billion in 1981 and are expected to exceed $13 billion in less than 5 years (*Computers: Focus on the Classroom*, 1982). The microcomputer is quickly becoming as common as blackboards or notebooks. It is not a passing fad.

If you doubt the ability of microcomputers to assist the educational process, consider these situations:

- A counselor is asked by the principal to make student assignments for next year, taking into consideration parent requests, teacher requests, and a fair balance of the best and worst students in each grade.
- A teacher sends a second-grade student to the counselor because the student does not learn at the same pace as the majority of the class. Discouraged and disruptive, the student is labeled a "behavior problem" that the counselor is expected to solve for the teacher.
- A counselor's position is threatened because the school board does not know what the counselor really does. Is there any hard evidence as to the number of student contacts, parent and teacher conferences, and outcomes?

All of these challenges can benefit from computer assistance. The first and third problems can be solved with the help of the record-keeping abilities of computers. The second-grade child may be helped by the self-pacing, tireless, and reinforcing abilities of the microcomputer in computer-assisted instruction (CAI).

Computer Competencies

We suggest four specific competencies that counselors need to acquire:

1. An elementary knowledge of microcomputer components and some of the vocabulary surrounding computers.
2. An awareness of the current uses of microcomputers by students, teachers, and counselors.
3. The ability to identify and act upon inherent ethical issues concerning the present and future uses of computers in the schools.
4. A willingness to see and act upon potential opportunities for the use of microcomputers.

What is a Computer?

The computer is simply a machine that does some tasks incredibly well and incredibly fast. It has absolutely no ability to do these things unless a person has written a program that will instruct the machine for this task. Once this program (software) is created, the applications are almost limitless.

The microcomputer's basic parts can be simply described:

- A keyboard, similar to a typewriter keyboard, allows you to "enter data" (give instructions to the machine). Computer keyboards have more keys than regular typewriters. The additional keys are often used to move the cursor (a flashing line or square that indicates your position) on the screen or to give frequently used commands to the machine. For example, instead of typing "print this document," by pressing one of these additional keys you can achieve the same result with a single keystroke.
- A viewing screen (sometimes called a video display terminal [VDT]) allows you to see your work. Because you are often working with words and numbers, a regular television set does not work well as a VDT. The words and numbers look broken up and are hard to read.
- The processor is the place where the actual computing takes place; it is the "brain" of the machine.
- Disk drives are used to read and store data. Most software programs and the information you create with them are stored on 5 1/4-in. (13.3-cm) magnetic diskettes. The drives act like tape recorders: They can "play" information into the machine as well as "record" information you have entered with the keyboard or the processor has created. The small diskettes can hold large amounts of information. More than a quarter million bytes (keystrokes) can fit on a single diskette.

- A printer creates a permanent copy of the information. Dot-matrix printers, which may be familiar to you from such computer printouts as test scores, billings, or form letters, achieve high speeds of 100 or more letters per second by forming letters with groups of dots. For example, using six dots in the specific pattern that forms the letter *i* is faster for a printer than finding an *i* key.

A Brief History

Computers have been part of our society for a quarter century. Compact, portable, and less expensive machines have been developed during the past decade. Although 100 companies manufacture microcomputers, the type of machine that is becoming accepted in the schools seems to be one of about a dozen brands. Fierce competition for our business is already producing widely accepted hardware and software as well as obsolete machines and programs.

Microcomputer advances are an outgrowth of the U.S. space program. We could not send heavy and underpowered calculating and data storage machines into outer space. The first manifestations of miniaturization were the pocket calculators and digital watches now commonplace in the schools. First-generation computers the size of a classroom have been replaced by microcomputers that can fit in the palm of a child's hand.

Computers are affecting the quality of our life. Microcomputers and microprocessors (the calculating component of a computer) are found in automobiles, microwave ovens, automatic bank tellers, and supermarket check-out lines. Many tasks can be performed more quickly and efficiently with the assistance of computers.

A computer has two major advantages. It can store large quantities of information (data), never forgetting a single item (unless the power fails!). It can work on this data in milliseconds—faster than the blink of an eye. The advantages of volume and speed are now being used in our schools in several areas:

Administration. Grades, records, and achievement tests have been stored, scored, and printed by computers for years. The machines that perform these tasks are often quite large and located in a central office. Recent advances now place these capabilities in the counselor's office. Case loads, student records, scheduling, and assessment can now be stored and accessed on a microcomputer. The advantages over past methods are speed, clarity, accessibility, and cost effectiveness.

Computer-assisted instruction (CAI). Students now work at their own pace in advanced, regular, or tutoring applications of educational software. The computer can store a seemingly endless number of drills, reinforcement, and

lessons. The first uses of CAI were in mathematics, and several years ago over 95% of educational software was devoted to mathematical applications. As the Alert—Update department of this issue indicates, software is now reaching areas such as language and vocabulary development, foreign languages, social studies, and career development.

Counselor assistance. Because classrooms are a larger market, development of software for counselors has been much slower. Currently, however, a number of programs allow counselors to record accurately their time, analyze their interactions and time expenditures, and provide information that can increase their knowledge of the students and teachers they serve. Counselors can also use readily available programs to serve their needs for student records, word processing (once called "writing"), and an increasing variety of tasks.

Can Computers Counsel?

In a word, no, not yet. Programs that have demonstrated the computer's ability to listen reflectively (actually drawing on a large set of options programmed into the machine) are not yet sophisticated enough to replace the counselor. It is improbable that computers of any size or capacity will ever replace the counselor. Machines do not have the ability to make decisions, share feelings, or make judgments as effectively as the counselor or therapist.

But computers can help counselors (a) by freeing time otherwise spent in administrative tasks; (b) by performing initial assessment and data search functions, such as intelligence test reports, career search information, and identification of specific trends or groups within the school population; (c) by providing otherwise discouraged children with a positive learning experience with a computer; (d) by providing an inexhaustible resource for gifted students; and (e) by providing teachers with an effective teaching assistant in the classroom.

If a computer cannot counsel, it can increase the time available for counseling. It can provide accurate information for counseling and decision-making tasks. The microcomputer is, at the very least, a time saver and an organizational tool.

Practical Issues

We must be able to speak some of the language of computers. As the glossary in this issue indicates, a specialized vocabulary has been developed to communicate the unique aspects of these machines. Just as special education, reading, or other areas develop terms to convey meanings, computer users have created a vocabulary. You do not need to be fluent in "computerese," but your

understanding of computers and their applications can be greatly enhanced, for example, if you know the difference between hardware and software. *Hardware* is the machine, *software* the programs that give instructions to the machine.

We must also know what computers can and cannot do for our students, teachers, and ourselves. To the uninformed, *computer* is a nebulous term that conjures images of all-seeing, all-knowing machines that would justly threaten us if these images were indeed fact. From our life experience, computers are the culprits when we are unable to correct a billing mistake with our local department store. We have personal evidence that these machines cause aggravation.

Fortunately, computers are only as good as the people behind them. There is absolutely no judgment capability in a computer. It only follows orders given by humans. Just as the refrigerator door does not have the good sense to shut itself when left open, neither does the computer have the ability to think. It can only work with what it is given. Human ability allows these machines to perform these tasks.

Computers cannot do anything we do not want them to do, and they cannot do anything we are unable to tell them to do. We must overcome our prejudices against the machines, remembering that people are responsible for any unpleasant experiences.

The effectiveness of microcomputers for counselors has been limited by a lack of useful software. We cannot expect each counselor to become a programmer (you do not have to become a mechanic to drive an automobile), but we can anticipate that software will be developed that meets our needs. We must have the ability to identify useful software from the large number of programs being sold.

Ethical Issues

Are we now using computers ethically? Technology has created a situation in which abuses are easy to start but difficult to stop. Awareness of potential abuses of the information stored in computers is a necessary computer competency for counselors. Sampson and Pyle (1983) identify three areas of potential abuse:

1. Is confidentiality of student records maintained? It is now possible for a large amount of information about each of our students to be stored for indefinite periods of time. The number of absences in the second grading period of the first grade can be retrieved 20 years later when a person is being assessed for medical school candidacy. Is this information relevant? At what point do portions of a student's record stop following them? The mass storage abilities now being used must have specific end points. When a child graduates or

transfers out of your school, what is saved and what is passed on to other institutions?

2. Is computer-assisted testing and assessment being used properly? The technology now exists, for example, to mix subjective counselor and teacher observations of a child with test scores, previous observations, parental status, and other variables into a "score." Will this information be used to place children in advanced, normal, or remedial classrooms? Computer technicians have used the term *GIGO*—garbage in, garbage out—to describe inappropriate use of information generated by computers. When testing and assessment is assisted by computers, the results cannot be taken for granted. Results are no better than the assumptions we hold about the data. Erroneous conclusions are worse than no conclusions, even when a computer is involved. The myth of infallibility of computer-generated results must always be challenged.

3. The need for counselor intervention, even when a computer can assist a process, can be overlooked. For example, upper grade students are now using career data bases that provide them with quantities of information no single counselor can provide. But is the total process of successful and meaningful career selection based only on the information or assessment a computer can provide?

We must be aware of computer anxiety too. Although this phenomenon apparently exists more often in adults than in students, we cannot simply tell students to "see the computer; it knows more about this than I do." Successful interaction with a computer requires skills. Everyone falls off the bike when first learning to ride. The ability to use a computer has a similar learning curve. Skinned knees heal more easily than bruised egos. If students and teachers are expected to use these machines, they must be given proper training and encouragement.

We suggest that counselors should be able to answer the following questions concerning computer use in their school:

1. What student information is being stored in computer data bases? What is the expiration date for the storage of this information?
2. Who has access to this information? How do these people use the information?
3. If computers are being used to score test results and provide other evaluations of students, what procedures ensure that the results are accurate and appropriate?
4. When portions of our work with students are turned over to computer-assisted procedures, how do we ensure that human interaction still takes place?

5. What training is being provided for students, teachers, counselors, and administrators interested in computer skills?

The ethical issues concerning computers are not theoretical. Abuses can and do occur. It is our responsibility to ensure that rights are not violated through ignorance.

The Counselor as Computer Consultant

The widespread demand for computers is now forcing educators to become knowledgeable in this field. It is a field that becomes outdated within months, not years, with a confusing array of choices. The counselor can become a valuable resource for administrators, teachers, and students.

Does the counselor really have a choice? If we choose not to use or know about computers, are we in fact incompetent? Hays relates an encounter with a concerned school counselor:

> Recently, an elementary school counselor in an eastern state asked me how the micro can help her in her work with children. We talked about what she does and we came to the conclusion that a micro would not be of assistance to her. Micros are not for all people. One must be careful not to get swept up in a new wave of innovation. It is important to ponder first what you want the micro to do that can help you improve what you are now doing. (Hays, 1983, p. 7)

Even when counselors conclude that the computer does not serve a useful purpose in their settings, they must still become aware of its impact on the administrators, teachers, and students in their schools. It has been estimated that within 5 years at least one microcomputer will be in every school in the nation (*Computers: Focus on the Classroom*, 1982).

Our experiences in researching this field for the special issue and this article have shown us that people can become "haves" (those with some knowledge of microcomputers) with a little effort. By default you may become a "have not" who is unsure of your computer potential or of the available resources for credible and useful information. Some common issues that seem to concern educators include:

How do I get a microcomputer into my school? Competition for your business is fierce. Studies show that the machine you use successfully the first time is the brand you tend to stick with. What better place to make the first impression than the schools?

Manufacturers are constantly offering educational discounts and grants to fund educator purchases of their equipment. Proposed federal and state legislation would allow special tax credits to companies that donate their hardware to schools. This is a controversial proposal, because it allows these

companies to get their foot in the door for more lucrative software sales and maintenance contracts. The status of this legislation is always changing and should be monitored by all counselors who anticipate purchases of microcomputer equipment.

Who will teach me? Many districts are now assigning a teacher or support staff member as a "computer specialist." Responsibilities include staff training and support.

We advise that counselors and teachers be given uncomplicated, brief, and practical hands-on exposure to the microcomputer. This allows the potential user to see the usefulness of the equipment.

The value of a microcomputer can be demonstrated within 15 minutes. Training will take from 5 to 50 hours, depending upon the quality of the instruction and the specific hardware and software. Access to "experts" after an initial training period is crucial. Most important, the experts must be able to speak the language of educators.

How much money will it cost? A rudimentary computer costs less than $100, but a realistic figure for a functional system is about $3,000. This is an investment in an office clerk, teacher's aide, and consultant that draws no further salary after the initial purchase.

What is the best equipment for our needs? This is an unanswerable question. It depends upon the needs and goals of the school. A counselor with 200 students will need far less memory in the machine than one responsible for 500. Compatability with district-wide machines and software must be considered. An inexpensive initial purchase may become three items more expensive if unrecognized limitations must be corrected.

The selection rule of thumb is twofold: See what others in similar circumstances are using, and make sure the software you need is now available for the desired hardware. This evaluation and selection process can take 6 months.

Summary

The computer is only as good as the information it is given. We were involved 10 years ago in a pioneering effort to reduce transportation costs to and from a school. After many weeks of entering addresses and coding information, we eagerly awaited the computer's assessment of the best bus routes. Time would be saved for children and parents. Teachers would have less bus duty.

The results were astonishing. The computer had indeed drawn highly efficient schedules and routes but had not accounted for the lack of bridges over some canals within the district. We could either outfit all buses with pontoons or reprogram the computer!

This anecdote demonstrates the need for human input into the computer process. A computer must be told what to do. Unlike the computer "HAL" in the classic movie *2001: A Space Odyssey*, microcomputers in the schools are not intent upon destroying us or our students. The first step in computer competency is knowing what the machine will do better than we can now do with other equipment and human effort.

Counselors are in a unique position in the schools: they have the potential to serve as consultants and proactive users. Counselors can serve their students and teachers more effectively by using microcomputers to create more accurate and useful records of their work and by being aware of the inevitable and ongoing impact of microcomputers on the educational process.

A final word: No computer will ever replace a counselor able to use one.

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Getting Comfortable with Computers

Richard C. Nelson
Gerald H. Krockover

Change must be accepted . . . when it can no longer be resisted.
(Victoria Regina, 1895)

After a 20-minute introduction, the 45 of us scattered to three learning centers. I watched a secondary school counselor for several minutes as she followed a pattern of simple instructions on an assertiveness program. She was strongly reinforced after completing her responses. The basic message was: "You're exceptionally, appropriately assertive." It occurred to me that she might have responded in the same way to the questions asked of her if she were downright aggressive. Although she was subsequently presented with information differentiating non-assertiveness, assertiveness, and aggressiveness, I wondered if many aggressive people would choose to continue after being given such strong strokes.

I took the chair at the same terminal and ran through a stress management program. By now those around me were feeling playful, so I fed the computer a mixed bag of responses—some demonstrating high stress, others imperturbability. The graph that followed not only reflected inconsistency but was almost incomprehensible. Once again some good information followed. I left that station impressed that, as a novice, I could cope with the computer and even see a software weakness or two.

I moved on to the second learning center, observing that there was plenty of time left in the session but that only a few people remained in the meeting room. I chose a Sesame Street program that was partly designed to help young children become accustomed to the computer, and I greatly enjoyed mixing and matching heads, bodies, and legs of Sesame Street characters. Next I contended with an interesting animals program. As I thought of animals, the computer posed a few questions, asking, for example, "Are you thinking of an elephant?" If I said I was not, it would ask me how my choice, giraffe, differed from an elephant. The program then incorporated my new information, and I was asked to present finer and finer discriminations or be outguessed by the computer. I could imagine youngsters scurrying to encyclopedias to specify some fine difference between a lynx and a cougar while the computer waited patiently.

I moved on to the third station. Now there was only one other member of the audience. At this station I received a brief orientation to a record-keeping program. A counselor could punch a few buttons daily and see displayed on the screen or obtain a printout of the total and average number of minutes spent that month with individual children whose basic concern was friendships. Successes and failures, things to do, fourth-grade children who had volunteered for counseling but had not yet been seen—anything remotely quantifiable—could be recorded for ready recall, modified as changes occurred, and totaled so that reports could be prepared easily.

Now I was alone with the presenters. Had the others ingested the information more quickly than I? Possibly. More likely they had wanted to learn about computers without being willing to be observed, to err, and to allow the computer to demonstrate its infinite patience.

Since then I have been thinking: Counselors need the awareness such a program offers. Are we about to see a new generation gap, separating those who are comfortable with computers from those who are not? Can counselors afford to distance themselves from the children they serve as those children become more comfortable with computers?

—Richard C. Nelson

Why Should Counselors Gain Comfort with Computers?

Until the advent of microcomputers, computers were not "user-friendly"; only a few experts could understand the languages involved. It might have been appropriate then for counselors to avoid computer contact. Now, however, we have entered the age of microcomputers. Disks and tapes have been programmed to reduce complexity so that even preschool children can use computers, and more and more useful software is being developed. Counselors cannot afford to be left behind.

A parallel suggests itself. In the early 1900s drivers of those new-fangled gadgets called horseless carriages had to understand magnetos and sparks, they dealt with balky and dangerous hand cranks, and they needed to be well informed on many aspects of automobile maintenance. Those adventurers were akin to latter-day computer experts. It took a long time for millions of drivers to be automobile-comfortable. Key-operated starters, service stations in abundance, and simpler and safer automobiles have made us a nation of drivers, most of whom have little idea of what goes on under the hood. The parallel breaks down, however, when we consider the time element: The change from unfathomable difficulties to computer friendliness has occurred in just a few

years. It is here—today. Those who "cannot fathom" computers will soon feel as out of synchronization with their world as those who cannot drive.

Why should counselors gain comfort with computers? Why, indeed. So that they can live in their own world: today—and tomorrow. And so that they can understand and help children.

Is the computer world a dehumanizing place? Do children become numbers lost in a sea of other numbers? Are children losing their eyesight and becoming muscular imbeciles because they spend so much time at work or play before television and computer displays? Probably to a small degree these things are occurring. If and when they are, then we need counselors who understand uses of the computer that might be harmful and thus are better equipped to put up suitable "road signs" and contribute suggestions to engineers, not merely damn those "new-fangled gadgets."

Can the computer world be a humanizing place? Yes, it can. Children are being helped, patiently and thoroughly, to learn to complete tasks that might otherwise seem odious because they are reinforced for small gains and tolerated through a thousand errors that shape suitable responses. Computers have a humanizing advantage: They are blind to sex, race, ethnic group, and socio-economic status, showing virtually limitless patience to individuals from any group who happen to take longer than others to develop particular skills. Children are learning to complete some tasks more quickly, with the result that they have additional time available for large and small muscle activity. Computers are being programmed to record measurable gains children make in such diverse directions as school subjects and physical skills, with the result that fewer of them give up on themselves.

It was estimated in 1982 that one out of every four public schools had at least one microcomputer (50% of secondary schools and 14% of elementary schools) and that 74% of these schools were using microcomputers (Marks, 1982). Furthermore, it was predicted in 1982 that within the next 4 years 10% of homes in the United States would have computers or terminals with access to distant data bases, and that by the year 2000 these terminals would be commonplace in our homes (Long, 1982).

Clearly, computers are here to stay. Counselors who understand uses of the computer will be able to assist software producers to prepare materials that at best are humane and at least shorten tedious processes and leave time for those matters that only human contact and concern can develop. Like automobiles, computers are conveniences for getting somewhere. They may be misused and overused. But, like automobiles, their use is inevitable, and they can be turned to great advantage by those who allow themselves to become comfortable with their use.

Is Computer Literacy Essential?

As a result of the explosion of computer usage in all segments of society, the Information Society has indicated that the job skills needed for the 1990s and beyond include: evaluation and analysis, critical thinking, problem solving, organization and reference, synthesis, application to new areas, creativity, decision making with incomplete information, and communication skills in many modes (Hodgkinson, 1982). These skills may be developed in children and adults as they become "computer literate." Computer literacy may be defined as knowledge of the nontechnical and slightly technical aspects of the capabilities and limitations of computers and of the social, vocational, and educational implications of computers (Moursund, 1975). Johnson, Anderson, Hansen, and Klassen (1980) divided computer literacy into cognitive and affective components. The cognitive components include being able to:

1. Identify the major components of a computer (the hardware)
2. Identify the basic operation of a computer system
3. Distinguish between hardware and software
4. Access a computer
5. Follow simple directions in programming a computer
6. Recognize that a computer needs instructions to operate
7. Recognize that a computer gets instructions from a program written in a programming language
8. Recognize that a computer is capable of storing a program and data
9. Select an appropriate characteristic for organizing data for a particular task
10. Recognize specific applications of computers in all aspects of our society
11. Determine how computers can assist in the decision-making process
12. Recognize the impact that computers have upon our lives

The affective components of computer literacy include:

1. Becoming comfortable with computer experience
2. Gaining confidence in the ability to use and control computers
3. Valuing efficient information processing provided that it does not neglect accuracy, the protection of individual rights, and social needs
4. Valuing the computerization of routine tasks so long as it frees people to engage in other activities and is not done as an end in itself
5. Valuing increased communication and availability of information made possible through computer use provided that it does not violate personal rights to privacy and accuracy of personal data
6. Valuing economic benefits of computerization for the society

7. Enjoying and desiring work or play with computers, especially computer-assisted learning.
8. Describing past experiences with computers with positive affective words such as *fun*, *exciting*, and *challenging*
9. Spending some free time using a computer when given an opportunity

What Uses Might Counselors Make of Computers?

There are six areas of computer usage that are valuable for elementary school counselors. They include: (a) learning from computers via drill, practice, and tutorials; (b) learning with computers via simulations, games, and data collection or interpretation; (c) learning about computers via computer literacy and programming languages; (d) learning about thinking with computers using educational computer languages such as LOGO and PILOT; (e) learning about management with computers via text editing, test generation, data base management, and school management programs; and (f) using the computer as a reinforcer. Counselors should be especially interested in the use of microcomputers for data base management and accountability, text editing, developing specific skills, and as a reinforcer.

Any record-keeping task the counselor does or might do can probably be made easier with the use of a computer. Data base management allows the counselor to construct a data file for each student in the school, district, or community. The data file might include, for example, the student's name, address, telephone number, name(s) of parent(s), emergency telephone number(s), schedule, teachers, standardized test information, grades, and the specific focus of any counseling contact. Hays (1983) suggested that the counselor could keep confidential records very secure by using a password to gain entry to data on a floppy disk. The disk itself could be kept in the possession of the counselor, and considerable data could be stored in a space the size of a 45 rpm record. Once the data base has been established, it can be used to sort, retrieve, and update a student's record. Mailing labels, notes to children, and letters to parents could be filed and retrieved by using defined categories.

Although the initial stages would take some time, accountability would be greatly enhanced if counselors could report the number of children, teachers, and parents contacted and the number of minutes spent on any specified subject. Has group counseling reduced absenteeism for selected children on group meeting dates or other dates? Ask the computer. Has the classroom study skills project affected any specific aspects of achievement? Ask the computer. By using the same program and similarly recorded data, counselors across a school district, county, state, or the nation could pool information and determine

whether a specific approach has had a favorable impact on children with low self-concepts or who are low in sociometric standing in their group.

Clearly any of these record-keeping procedures can be conducted without the use of computers; with the new technology, however, the process is made so much easier that the likelihood of improved accountability should increase dramatically as counselors become more comfortable in using computers.

Text editing programs (word processing) allow the counselor to handle large volumes of correspondence more easily. Standard letters can be created for communication to students, parents, and teachers. Corrections or changes in the correspondence can be made without correction fluid, ditto masters, or erasing carbons. A word processing program permits deletion of anything from one character to a paragraph. Phrases, paragraphs, and pages can be relocated within a letter or inserted in another document. Furthermore, the text may be saved on a disk or tape for later use, and it may be printed with many options. These programs allow counselors to improve their communication with all of the constituencies they serve, a significant public relations gain in a time that is critical for the profession.

The current technology provides counselors with a wide range of materials that may be used to inform and educate children in a variety of specific directions, and a software explosion is underway that is resulting in continuous expansion of those materials in many guidance-related directions. There are programs designed for children that teach touch-typing skills, thus developing a usable skill that is applicable in computer literacy and beyond. Repetitious learning processes (e.g., learning the multiplication tables) are readily developed as game-type learning experiences programmed to increase in complexity or demand for speed. Although some of these processes are not guidance functions, it seems inevitable that counselors will on occasion act as individual facilitators of learning, either directly or through a variety of aide and peer tutoring procedures.

Increasingly, self-growth programs, similar to the stress management and assertiveness programs cited in the introductory paragraphs, are appearing on the market as aids in enhancing personal or interpersonal skills for children. In many cases interpersonal skills might be enhanced and reading and related skills developed simultaneously by having two or more children work together at a microcomputer, discussing and choosing responses cooperatively. Applications of computers in informing and educating children seem to be limited only by the imaginations of software producers and individuals who can adapt software to their own uses.

In addition to these uses of computers by counselors for record keeping and accountability and by children for obtaining information and developing skills, it is apparent that the computer offers great potential as a reinforcer for children.

Free time at the computer can be used as a reward for gains or effort. Children can insert a disk or tape of their choosing, play a learning game with or without a partner, and compose music or watch color graphics merge and flow in an endless sequence of kaleidoscopic patterns. Any device or process that is as compelling for most children as the microcomputer can serve as a significant reinforcer. More and more the play aspects of the computer are merging into the work aspects of learning. Children are being helped to learn through intriguing processes that they find highly rewarding. Perhaps the most significant gain that we can expect from the use of computers is that learning will increasingly be seen by children as a rewarding experience in and of itself.

How Should You Get Started?

The best way to begin your computer friendly approach to becoming a computer-literate counselor is to obtain access to one of the microcomputers in your school. Find out the brand and model of the computer. Locate the nearest computer dealer that sells this brand of computer, and purchase a copy of the corresponding self-paced, programmed guide to that computer (your school may already have a copy). This book and the computer manual should be all that you need to begin to become a friendly computer user. You should be able to turn the computer on and off, use tape or disk software, and use some of the basic computer commands such as RUN, SAVE, LIST, and PRINT.

If you are interested in learning programming, these books will also introduce you to the basics. It is not necessary, however, to be able to program a computer to use one. There are computer programming resources readily available in your school and community—maybe a teacher, fourth grader, principal, parent, or computer user club. There is someone who will be happy to help you join the club of computer users. Microcomputer journals can also be very helpful in providing tips for the selection and use of microcomputer hardware and software. Journals such as *Creative Computing*, *The Computing Teacher*, *80 Microcomputing*, and *Incider* serve as excellent resources for those who are learning to use computers.

It seems advisable for counselors who wish to make use of computers to learn something about two computer languages, BASIC and LOGO. Of the two, LOGO is simpler because it is more graphic, and it may therefore provide an easier starting point for the novice. LOGO can be used to draw pictures on the computer's video display by entering instructions at the computer keyboard. A shape on the screen (called a "turtle") responds to the instructions entered by moving around and leaving a trail of color on the screen. LOGO allows children to learn by exploring and involves them in thinking logically about directions,

distances, and angles. LOGO gives children vast opportunities to be creative, and there is even a special feature, called "Doodle Mode," for children who cannot read yet. Much has been written about the educational theory behind LOGO-type programs (e.g., Pappert, 1980).

If you are in a position to be able to influence the selection of a microcomputer for purchase by your school, it is important to consider what uses other counselors in your school district are making of hardware and software and to select the same brand of microcomputer if this is feasible. This will allow for the full exchange of software and data management for the preparation of district-wide comparative reports and statistical analyses. Check with other school districts in your region before a decision is made regarding the computerization of elements of your counseling program.

Conclusion

Before the 1980s it took years for textbooks and schools to reflect current events. The schools of the future will need to install more computer terminals and other electronic equipment for using such items as tapes and videodisks to keep pace with the changes and improvements in education and guidance. The electronic microchip is not likely to cause a decline in the teaching and guidance profession, but the status of teachers and guidance counselors and what they do is likely to be quite different as they work at developing our planet's greatest resource: our learners. With the help of the tools for improving learning that the microchip provides, the skills of professionals such as elementary school counselors should help guarantee that the world retains the capacity to move toward a decent, civilized future (Shane, 1982).

Dateline 2001

The telephone rings and the counselor, Mr. Richards, answers via his interactive computer terminal. It is a third grader asking to be scheduled for his fourth-grade mathematics program and his sixth-grade social studies program. Mr. Richards enters the access code into the computer, and Jerry receives a listing of the times and programs available for mathematics and social studies at his levels. At the same time another student, Barbara, is receiving career information regarding the training required for technicians who will work at the moon colony for the next 10 years. Mr. Richards also initiates the administration of several different standardized tests to individual students throughout the district and helps Martha, a fourth grader, get started on a choices program. Upon completion of these early morning chores, as his 9:00 group of

fifth graders files in for another session of getting along together, he recalls the "good old days" of 1983 when he had to process everything and prepare complicated reports by hand, work around rather inflexible student schedules and put in extra hours to catch up on his paperwork so he could spend the time he thought was necessary with the children. "Thank goodness we don't have to return to those 'good old days,'" he says to himself. "I might have decided to become an engineer instead of a counselor! Now I have time to counsel!"

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Chapter 6
Counseling Issues in a Technological World

Issues for elementary school counselors to consider about a technological world:

1. Discuss the following statement: "Secondary school counselors have far more uses for computers than do elementary school counselors."
2. What should counselor education programs include to prepare elementary school counselors in using computers?
3. What can elementary school counselors do to reduce their anxieties about using computers?
4. What technological advances (other than computers) will play the greatest role in elementary school counseling by the year 2000?
5. What can children teach counselors about the use of technology?
6. How might elementary school counselors make use of computer graphics in classroom guidance?
7. Discuss the pros and cons of the following statement: "Computers have depersonalized education."
8. How can elementary school counselors use video technology to improve their work with children?
9. How might elementary school counselors use computer technology to improve their counseling with individual children?
10. Develop an inservice training program that is intended to reduce teachers' anxieties about using computers in the classroom? How do you feel about elementary school counselors involving themselves in this kind of inservice training?